

DIRECTIONAL SOLIDIFICATION OF A METAL

Abstract of the Disclosure

A molten material can be heated, melted and directly solidified in a single vessel. Induction heating and melting of the molten material is achieved by magnetically coupling the field produced by current flow in a plurality of induction coils surrounding the vessel with either the molten material in the vessel, or a susceptor surrounding molten material in the vessel. Current flow is selectively removed from the plurality of induction coils, and a cooling medium surrounding the vessel, such as water flowing through hollow induction coils, solidifies the molten metal into a highly purified crystalline solid.